d. Distribution Table

The Distribution Table details the Percentage of each type of cable by equipment account (ex., underground cable, buried cable, etc) found in each cable size. For instance, one can discern from this table that 50% of all 30 gauge cable in Texas is in the Aerial Cable Equipment Account. The references to different cable sizes on this table are irrelevant for the fiber cable accounts, although the other data reported by this table is necessary for all cable types. For example, this table might still show a user that 60% of all fiber cable is in the Buried Fiber Cable Account. For the DS-1 NAC, the Distribution Table for Cost Driver Combination WC1/D1/MB1 can be seen behind tab 1 in Subtab A, Tab III in the Network Access Channel DS-1 Level Investment Binder (page 6).

e. Pair-foot Investment Table

The next table in the LPVST Model is the Pair-foot Investment Table. While this table is set up with an identical size, shape and structure as the Distribution Table, the Pair-foot Investment Table reports the actual Cost per Pair-foot for each size of cable for each cable equipment account. For instance, one can discern from this table that the Cost per Pair-foot for a 30 gauge cable in the Aerial Cable Equipment Account is $1.50. As above, the references to different cable sizes on this table are irrelevant for the fiber cable accounts, although the other data reported by this table is necessary for all cable types.

For example, this table might still show a user that fiber cable in the Buried Fiber Cable Account costs $1 00 per foot (per channel in the fiber). For the DS-1 NAC, the Pair-foot Investment Table for Cost Driver Combination WC1/D1/MB1 can be seen behind tab 1 in Subtab A, Tab III in the Network Access Channel DS-1 Level Investment Binder (page 6).

f. Factor Table

The sixth table, the Factor Table, includes factors for conduits (for underground cable), poles (for aerial cable), and a Fill Factor While SWBT says that the Conduit and Poles Factors represent an approximation of the relative cost of conduit or poles to underground or aerial cable (respectively), the Fill Factor represents the percentage of total lines that are actually 'assigned,' or used by a customer These factors are used along with the values from the Pair-foot Investment Table and the Distribution Table to determine the Two-wire Investment (or Total Weighted Investment per Kilofoot) for each equipment account. As one might expect, the Total Weighted Unit Investment for an account (cable, pole or conduit) for two kilofeet is simply double the Total Weighted Unit Investment for one kilofoot.

Underground cable requires the use of a conduit. The Investment in Conduit per Kilofoot is obtained by multiplying the Conduit Factor by the Underground Cable (either Copper or Fiber) Investment per Kilofoot, and is transferred to the Conduit Account. A similar computation is done to find the Investment in Pole per Kilofoot. The Aerial Cable

Investment per Kilofoot (for copper cable only, as fiber is never aerial) is multiplied by the Pole Factor, resulting in the Investment in Pole per Kilofoot

For the DS-1 NAC, the Factor Table for Cost Driver Combination WC1/D1/MB1 can be seen behind tab 1 in Subtab A, Tab III in the Network Access Channel DS-1 Level Investment Binder (page 6).

g. Two-wire Theoretical Investment Table

The Unit Investments (for Fiber or Copper Underground Cable, Fiber or Metallic Buried Cable, Aerial Cable, Poles, and Conduit Accounts, where applicable) are entered onto the eighth table used by the LPVST Model, the Two-wire Theoretical Investment Table (For the DS-1 NAC, the Two-wire Theoretical Investment Table for Cost Driver Combination WC1/D1/MB1 can be seen behind tab 1 in Subtab A, Tab III in the Network Access Channel DS-1 Level Investment Binder (page 7)).

For each kilofoot (in one-kilofoot increments), each equipment account's per-kilofoot Unit Investment is multiplied by the percentage of cable samples in that particular kilofoot range (as obtained from the Cable Feet Percentage Table). When the result of this multiplication is summed for every per-kilofoot investment for a particular equipment account, the result is the Investment per Two-wire Loop for that equipment account. Once again, there are 15 different Two-wire Theoretical Investment Tables, each one with different values for Investment per Two-wire Loop.

h. BNF Matrix

Before going any further, the Investment per Two-wire Loop for each relevant copper equipment account is multiplied by a figure of 2.04. The two in this figure represents the fact that there are actually two pairs of wire used to provide the DS-1 BNF. The 0.04 is a factor that accounts for the number of 'fault' wires used as backups and spares, and is based on engineering data. The product of this multiplication is entered on the BNF Matrix, as first discussed in the explanation of the COSTPROG SAF Module. Note that fiber cable unit investments are not multiplied by the 2.04 figure, as fiber (and thus DS-3) neither relies on pairs of wires nor requires fault wires.

Once on the BNF Matrix, these unit investments are treated in much the same way as the unit investment results of the COSTPROG SAF Module were, the only difference being the larger number of equipment accounts for which unit investments were determined by the LPVST Model. As seen in the discussion of the SAF Module, each output from the BNF Matrix is transferred onto its own equipment account ACF Sheet in the DS-1 NAC BNF LRIC study.

As discussed previously, the method in which LPVST calculates the unit investments for the DS-3 cable is in much the same manner as is done for the DS-1 cable.

Figure 8 lists the outputs for each of the tables in the LPVST Model (using DS-1 Feeder Cable in MB1 as an example), and where each of these outputs is used.

Figure 8: Outputs for Each Set of Tables in LPVST for DS-1 Feeder Cable in MB1

Name of Table	Major Output(s)	Major Output(s) Transferred to:
Cable Feet Table	1) Number of Samples per Kilofoot 2) Total Number of Samples 3) Total Number of Kilofeet in Samples	1) Cable Percentage Table 2) Cable Percentage Table 3) Theoretical Resistance Table
Cable Percentage Table	Percentage of Samples per Kilofoot	Two-wire Theoretical Investment Table
Theoretical Resistance Table	Wire Size to be used for Total Number of Kilofeet in Samples (for Copper only)	1) Distribution Table and Per Foot Cost Table
Distribution Table	1) Percentage of Wire in Aerial Cable Account per Gauge (for Copper only) 2) Percentage of Cable in Buried Cable Account (also per Gauge for Copper only) 3) Percentage of Cable in Underground Cable Account (also per Gauge for Copper only)	1) After modification, to the Two-wire Theoretical Investment Table 2) After modification, to the Two-wire Theoretical Investment Table 3) After modification, to the Two-wire Theoretical Investment Table
Per-Foot Investment Table	1) Cost of Wire in Aerial Cable Account per Gauge (for Copper only) 2) Cost of Cable in Buried Cable Account (also per Gauge for Copper only) 3) Cost of Cable in Underground Cable Account (also per Gauge for Copper only)	1) After modification, to the Two-wire Theoretical Investment Table 2) After modification, to the Two-wire Theoretical Investment Table 3) After modification, to the Two-wire Theoretical Investment Table
Factor Table	1) Relative Cost Conduit to Underground Cable 2) Relative Cost of Poles to Aerial Wire 3) Fill Factor	1) After modification, to the Two-wire Theoretical Investment Table 2) After modification, to the Two-wire Theoretical Investment Table 3) After modification, to the Two-wire Theoretical Investment Table

Two-wire Theoretical Investment Table	1) Investment in Two-wire Loop for Pole Account 2) Investment in Two-wire Loop for Aerial Cable Account 3) Investment in Two-wire Loop for Copper Conduit Account 4) Investment in Two-wire Loop for Underground Copper Cable Account 5) Investment in Two-wire Loop for Buried Copper Cable Account 6) Investment in Two-wire Loop for Fiber Conduit Account 7) Investment in Two-wire Loop for Underground Fiber Cable Account 8) Investment in Two-wire Loop for Buried Fiber Cable Account	1) After modification, to the BNF Matrix, MB1 Level 2) After modification, to the BNF Matrix, MB1 Level 3) After modification, to the BNF Matrix, MB1 Level 4) After modification, to the BNF Matrix, MB1 Level 5) After modification, to the BNF Matrix, MB1 Level 6) BNF Matrix, MB1 Level 7) BNF Matrix, MB1 Level 8) BNF Matrix, MB1 Level
BNF Matrix	1) Total Unit Investment for Buried Copper Cable Account 2) Total Unit Investment for Underground Copper Cable Account 3) Total Unit Investment for Aerial Cable Account 4) Total Unit Investment for Building Cable Account 5) Total Unit Investment for Conduit Account 6) Total Unit Investment for Buried Fiber Cable Account 7) Total Unit Investment for Underground Fiber Cable Account 8) Total Unit Investment for Poles Account	1) ACF Sheet in BNF Study 2) ACF Sheet in BNF Study 3) ACF Sheet in BNF Study 4) ACF Sheet in BNF Study 5) ACF Sheet in BNF Study 6) ACF Sheet in BNF Study 7) ACF Sheet in BNF Study 8) ACF Sheet in BNF Study

5. Staff Review and Recommendation

Staff has participated in meetings with representatives from SWBT to develop an understanding of both the theoretical basis and the application of the LPVST Model used in the Network Access Channel per DS-1 Level per NAC and Network Access Channel per DS-3 Level per NAC Quantity 1, Network Access Channel per DS-3 Level per NAC Quantity 3, Network Access Channel per DS-3 Level per NAC Quantity 6, and Network Access Channel per DS-3 Level per NAC Quantity 12 BNF LRIC studies filed in this project. Staff's review of the LPVST Model has entailed verification of calculations used in its module to determine line haul equipment unit costs. To verify the calculations used to develop the unit costs for NAC equipment, Staff used tables, engineering and vendor price data, and equations that are used to develop these costs obtained from SWBT representatives. Due to the volume of unit costs output from the LPVST Model, Staff attempted to duplicate only a sample of the unit costs of each of the NAC Cable (and related equipment) Accounts and Cost Driver Combinations. The sample was, however, extensive enough so Staff verified the mathematical accuracy of unit costs for each equipment account and Cost Driver Combination at least once. Staff also verified that the unit costs developed by the LPVST Model were transferred correctly to the ACF Sheets in the BNF studies. While most of the equations supporting these unit costs are not mathematically challenging, some have technical specifications that require specific

knowledge of the particular equipment to be fully understood. Nevertheless, Staff reviewed the formulas and determined them to be reasonable with one concern.

As discussed in Staff's recommendation for the COSTPROG Line Haul Module, the LPVST Model correctly separates out investment in conduit from investment in underground cable. Therefore, there is no application of Annual Charge Factors developed for the Underground Cable Account to conduit equipment, as there was in the Line Haul Module. However, Staff has another concern with the treatment of conduit investment that occurs in both the Line Haul Module and the LPVST Model.

SWBT assumes that the Conduit Factor for all underground cable (whether it be fiber or copper) is the same (in both the Line Haul Module and LPVST). While it is not necessarily odd that a company would account for the cost of a piece of equipment based on its relationship to the cost of another piece of equipment, it does cause concern when it is assumed that a piece of equipment has the same cost relationship to two very different pieces of equipment (which are also very different in their costs).

For example, if the Conduit Factor were 25%, one would assume that the cost of a foot of conduit is 25% of the cost of a foot of cable. However, if copper cable costs $1.00 per foot and fiber cable costs $2.00 per foot, one must ask if conduit costs $0.25 (25% times $1.00) or $0.50 per foot (25% times $2.00). What is more likely is that the cost of conduit (which SWBT confirms is the same for copper or fiber cable) is the same amount per foot, but varies in its relationship to the cost of fiber and copper cable types. As an example, it would make more sense to assume the conduit costs $0.50 per foot and is therefore both 50% of the cost of copper cable ($0.50 per foot divided by $1.00 per

foot) and 25% of the cost of fiber cable ($0.50 per foot divided by $2.00 per foot). Neither the LPVST Model nor the Line Haul Module (for the DS-1 and DS-3 Dedicated Interoffice Facility BNFs) take this approach

The result of this mistaken assumption of relative conduit cost is that the unit cost of conduit in the Conduit Equipment Account for the less expensive cable material (copper in this example) is going to be inflated Likewise, the unit cost of conduit in the Conduit Equipment Account for the more expensive cable material (fiber in this example) is going to be less than it should be. Thus, a BNF or service using a relatively large amount of copper cable versus fiber cable will have a LRIC reflecting an equipment investment that is larger than it should be. Likewise, a BNF or service using a relatively large amount of fiber cable versus copper cable will have a LRIC reflecting an equipment investment that is less than it should be

SWBT has provided Staff with results of calculations done to determine the size of the error caused by this misallocation. Staff has examined the method that SWBT used to determine the size of the errors and agrees with it The results of these calculations show an extremely insignificant impact on the results of the DS-1 and DS-3 NAC BNF LRIC studies. Due to the insignificant impact, as well as the large amount of resources necessary to correct this misallocation, Staff does not find it necessary that SWBT correct this error when it refiles amended DS-1 and DS-3 NAC BNF LRIC studies. However, in future BNF LRIC studies using the LPVST Model, Staff will verify that this misallocation has a minimal effect on the result of the studies

Staff, after a thorough review of the LPVST Model, believes that it would be a valid tool for use in developing costs assuming the misapplication regarding the conduit equipment continues to have an insignificant impact on the results of all BNF LRIC studies using LPVST Furthermore, the complexity of the model, the sheer volume of the inputs to the model, and the calculation of NAC equipment unit costs, in many cases without regard to the service using those resources, all make it difficult for the model to be manipulated. On a going forward basis, for SWBT NAC LRIC studies, Staff will at a minimum check to see that the correct unit costs from the LPVST Model are transferred to the ACF sheets in the BNF LRIC Studies. If SWBT develops new LPVST Model outputs pursuant to a new release of the cost models, Staff will once again review the calculations as needed Also, as stated above, Staff will continue to verify that the misallocation involved with the Conduit Factor has minimal impact on the results of each BNF LRIC study.

However, Staff did discover numerous instances of mistransfers of LPVST results from the Output Page (which is located behind Subtab C of Tab I) in the DS-1 NAC Investment Study to the ACF Sheets in the BNF LRIC studies. All of the mistransfers Staff discovered concerned Cost Driver Category WC2/D2/MB2 for the DS-1 NAC. SWBT has recognized these errors and will correct them when they refile the BNF LRIC studies in this project.

While Staff believes that the LPVST Model used by SWBT may be utilized in a manner consistent with the principles, instructions, and requirements set forth in §23.91, Staff reserves the right to challenge a specific application of the model in future LRIC

studies if Staff believes SWBT is using the model in a manner inconsistent with the principles, instructions, and requirements set forth in § 23.91

II. Personalized Ring per Line - Residential/Business BNF LRIC Studies

The Personalized Ring per Line - Residential/Business BNF LRIC study filed in this project is the only such study that uses the Bellcore Switching Cost Information System (SCIS) in determining the total monthly BNF cost. Thus, the way in which this BNF LRIC study is performed is in much the same way as those studies filed in Project 14091 (The Personalized Ring capacity cost calculations were performed, and Staff has reviewed them, in much the same manner as SWBT's BNF LRIC Studies for Call Forwarding Variable per Line, Call Waiting per Line and Touchtone per Line. Staff's Comments and Recommendations concerning these studies were filed on May 26, 1995 (See General Counsel's Comments on *Project No. 14091, Southwestern Bell Telephone Company's Application for Approval of LRIC Studies for Call Forwarding Variable Per Line, Call Waiting Per Line and Touchtone Per Line, Pursuant to P.U.C. Subst. R. §23.91* (GC Comments on 14091)).), and SWBT has incorporated all of GC's Recommendations for 14091 (except for Recommendation No. 9 regarding the statement of the existence of common costs), as ordered by the ALJ on June 15, 1995 in Order No. 3.

The main difference between the Personalized Ring BNF LRIC study and those from earlier projects is that the Personalized Ring Investment Study (SCIS Feature

Investment Module) is actually divided into two different Personalized Ring BNFs: Residential Personalized Ring (low usage) and Business Personalized Ring (high usage). The difference between the residential and business designations of this BNF lies in the substantially smaller amount of calls per busy hour that a residential line receives relative to a business line.

Each per-Line Total Investment developed in the Personalized Ring Investment Study (one for low usage and one for high usage) are transferred to its own ACF Sheet in the appropriate BNF LRIC study. After the Equipment Investment, Capital Cost, and Operating Expense Factors are applied to each of these values, the two BNF LRIC Studies each report a volume sensitive, recurring Total BNF Unit Cost; one for the Residential Personalized Ring BNF, and one for the Business Personalized Ring BNF.

Each Personalized Ring BNF LRIC study also has a volume insensitive, recurring Total BNF Unit Cost (per office) for some offices. This cost concerns equipment necessary for offices using certain switch technologies. This cost is transferred to an ACF Sheet and has the Annual Charge Factors applied in the same manner in which they are applied to the volume sensitive recurring costs in these studies. After the application of the Equipment Investment, Capital Cost, and Operating Expense Factors, this Total BNF Unit Cost (applied only to the appropriate offices) is reported on the Results Page of each BNF LRIC study.

Another difference the Personalized Ring BNF LRIC studies have with the switching BNF studies filed previously is its use of SCIS Release 7.2 instead of Release 7.1. According to SWBT, the actual equations used to develop the switch resource

capacity costs do not differ between the SCIS releases, but the actual numbers used in the equations may differ

However, for certain switch technologies, SWBT has changed to a different SCIS option to determine certain switch resource capacity costs for each model office. In the SCIS equations used in previously-filed switching BNF LRIC studies, SWBT used an SCIS option that accounted for replacing the current switch in the office with the least cost technology switching equipment necessary to provide the BNFs and the services that use these BNFs, as is consistent with the guiding principles and the full capacity utilization assumption required by Subst. R. §23.91. However, the SCIS option used in the Personalized Ring BNF LRIC studies ('new SCIS option') develop the investment based on the cost of adding another unit of capacity (as needed to provide enough BNFs to meet the demand for the services that use the BNF) to the model office's switch. Since this added unit of capacity investment is less than the switch it is being added to, the office investment is much lower in the Personalized Ring BNF LRIC studies than in previously-filed switching BNF studies.

A. Staff Review and Recommendations

Staff attempted to verify the calculations necessary to obtain both the volume sensitive recurring and volume sensitive non-recurring BNF costs in the two Personalized Ring BNF LRIC studies. This verification was done in much the manner as it was for the studies filed in Project No. 14091 (see GC Comments on Project No. 14091), for the

SCIS switch capacity resources and switch technologies used in the Personalized Ring BNF LRIC studies

Staff does not agree with the SWBT's use of the new SCIS option in computing the switch investment for the Personalized Ring studies. Staff cites four different parts of Subst. R. §23.91 in supporting its position.

1) Subst. R. §23.91(d)(2) says that the LRIC studies "...shall assume that the company is operating in the long run."

2) 'Long run' is defined in §23.91(c)(15) as "A period long enough to be consistent with the assumption that the company is in the planning stage and all of its inputs are variable and avoidable."

3) The 'long run incremental cost' is defined in §23.91(c)(16) as "...the change in total costs of the company of producing an increment of output in the long run...".

4) An 'increment' (for BNFs) is described in §23.91(f)(1) as "...the level of output necessary to satisfy current demand levels for all services using the BNF in question."

Regarding citations 1) and 2) above, Staff believes that costing out the additions to a switch already in existence, as SWBT has done by implementing the SCIS option used in

the Personalized Ring studies, is consistent with a short-run costing methodology because it assumes that the existing switch is simply added onto rather than replaced in whole with least cost technology. However, in the long run, the whole of the switch, not just the addition, would be variable and the company, knowing that it needed a larger switch to meet demand, would invest in the larger switch.

Regarding citations 3) and 4) from §23.91, Staff believes that costing the switch investment based on just the addition does not comport to the definition of 'long run incremental cost.' Long run incremental cost requires that the whole switch used to provide the BNFs to meet the current demand for all of the company's services requiring those BNFs is costed, not just an addition to that switch. Therefore, by costing only the added capacity to the switch rather than the whole switch itself, SWBT is not determining the cost of an 'increment,' but rather part of that increment.

Staff also notes that not all of the switch technologies used by SWBT and costed by the SCIS model is costed out using the new SCIS option. Most of the switch technologies used by SWBT are costed out using the same method they did in previously-filed BNF LRIC studies, as was recommended by Staff in GC's Comments on 14091 and approved by the ALJ. Therefore, Staff recommends that the ALJ order SWBT to file amended Personalized Ring BNF LRIC studies using an SCIS option that does not assume the use of existing capacity or equipment.

Additionally, SWBT informed Staff that the originally-filed Statewide Weighted Average for one of the switch resource capacity costs (for one of SWBT's switch technologies), as developed by SCIS and used to find the per line unit investment for the

Personalized Ring BNFs, was incorrect. SWBT has provided Staff with the correct value of the capacity cost, as well as the equations and values used in its determination. Staff has verified the mathematical accuracy of this revised equations and recommends that the ALJ order SWBT to use this revised value in the Personalized Ring BNF LRIC studies when it refiles these studies.

III. Explanation of Annual Charge Factors

As discussed earlier in this document, the calculations performed on the ACF Sheets in the BNF LRIC studies for the DS-1 and DS-3 NAC and Line Haul, DS-3 NACC, and the Multiplexing BNFs described above are much like the calculations on the ACF Sheets in the BNF LRIC studies performed for the studies filed previously by SWBT (See GC's Comments on 14091). In those previous studies, unit cost outputs from the investment studies were transferred to the ACF Sheets whereupon the Annual Charge Factors were applied. The result of this process was the Total Monthly Cost for the BNF, and this value was put onto the Results Page of the BNF study. However, there are some differences in the calculation of the Total Monthly Costs for BNFs in the BNF LRIC studies filed for this project.

A. ACF Sheets

One of these differences in the method used in the BNF LRIC studies filed for this project as compared to that for earlier projects has been discussed previously in this

document. For the DS NAC BNFs and the DS Line Haul BNFs, both of which have multiple cost drivers and equipment accounts (as well as the First/Additional Miles designations in the line haul studies), there are actually many different ACF Sheets in each BNF LRIC study. Basically, for each BNF, there is at least a different ACF Sheet for each Cost Driver Combination. As explained in the discussion of the COSTPROG Line Haul Module, there are actually 45 different ACF Sheets for each Line Haul BNF LRIC Study. The results of each of these ACF Sheets are eventually summed to obtain the Total Monthly BNF Cost for a Cost Driver Combination for a BNF. Each Total Monthly BNF Cost for a Cost Driver Combination is placed upon it's own Results Page in the BNF LRIC study.

B. Equipment Accounts

Another difference that the NAC, Line Haul, NACC and Multiplexing BNF LRIC studies have with those previously filed also concern the use of different accounts. Due to the nature of the some equipment used in providing the BNFs for which studies were filed in this project, certain ACFs that were applied to the switching BNF unit capacity costs to develop the BNF unit costs for the switching BNF LRIC study (such as the Telco Engineering Factor) may not be applied to the Unit Investment on the ACF Sheets in some of the BNF LRIC studies filed in this project (for reasons explained in the discussion of the SAF Module above).

Similarly, the way in which the equipment in the accounts used by the BNF studies filed in this project is depreciated leads to different values for the Capital Cost Factors (i.e., the Depreciation, Income Tax, and Cost of Money factors) applied to an accounts BNF unit capacity costs than were applied to the Digital Switching Account BNF Unit Capacity Costs. Other factors, such as Equipment Maintenance Factors, differ among equipment accounts as well. As can be seen, the values of these ACFs vary between accounts, even within a BNF LRIC study

C. Changes in ACF Values

In addition to the different values used for ACFs among different equipment accounts, the BNF LRIC studies filed in this project use ACFs based on the 1996-1998 Texas Incremental Factors and Methodology binder Many of these factors are unchanged from what were used in the 1995-1997 BNF LRIC studies filed in all previously-filed projects for Subst. R. §23.91 (See GC Comments on Project 14091), but many have changed. Other ACFs have changed not because of a change in study years, but due to the fact that SWBT made general changes to the ACFs as requested by Staff in Project No. 14091.

Below is a discussion of the ACFs used in all BNF LRIC studies filed in this project (including the Personalized Ring BNF LRIC study). Unless otherwise specific, all ACFs are calculated and applied in the same way as explained in GC's Comments on 14091.

1. Determination of Total Installed Cost

Once purchased, equipment must be engineered to company specifications, furnished and installed. The costs associated with these activities are traditionally developed by the application of Equipment Investment Factors. The six factors that SWBT proposes to use to determine the Total Installed Cost are: Sales Tax, Telco Engineering, Telco Plant Labor, Shipping and IDC, Power Investment, and Building Investment.

a. Sales Tax Factor

The Sales Tax Factor represents the state sales tax paid on purchases of material and is applied to equipment purchased from vendors. It is developed behind Tab 2 of the '96 Incremental Methodology and Factors Binder.

The only study filed in this project that applies the Sales Tax Factor to the unit investment on the ACF Sheet is the Personalized Ring BNF LRIC study. For this study, the calculation methodology and values used in computing the Sales Tax Factor and the Ratio of Material to Total EF&I Factor are the same as they were in Project No. 14091. As mentioned in the explanations of COSTPROG and LPVST, the sales tax factor for some of the equipment was applied in these investment studies as necessary.

b. Telco Engineering Factor

The Telco Engineering Factor represents labor costs for SWBT telephone engineers to perform additional designing and engineering of equipment. It is developed behind Tab 5 of the '96 Incremental Methodology and Factors Binder.

As with the Sales Tax Factor, the only BNF LRIC study filed in this project that applies the Telco Engineering Factor to the unit investment on the ACF Sheet is that for Personalized Ring per Line study. For this BNF LRIC study, the calculation methodology and values used in computing the Telco Engineering Factor is the same as it was for the BNF LRIC studies filed in Project No. 14091. Other BNFs either require no such engineering, or it is applied in the investment study.

c. Telco Plant Labor Factor

The Telco Plant Labor Factor represents labor costs required for SWBT to install equipment. It is developed behind Tab 5 of the '96 Incremental Methodology and Factors Binder.

Once again, the only BNF LRIC study filed in this project that applies the Telco Plant Labor Factor to the unit investment on the ACF Sheet is that for Personalized Ring per Line. For this study, the calculation methodology and values used in computing the

Telco Plant Labor Factor is the same as it was in Project No. 14091. Other BNFs either require no such labor, or it is applied in the investment study.

d. Shipping Expense and IDC Factor

The Shipping Expense and IDC Factor (also called the 'Sundry and Miscellaneous Factor') represents interest during construction (IDC) and central office rearrangements required for the installation of equipment. It is developed behind Tab 5 of the '96 Incremental Methodology and Factors Binder.

The only BNF LRIC study filed in this project that applies the Shipping Expense and IDC Factor to the unit investment on the ACF Sheet is that for Personalized Ring per Line. For this study, the calculation methodology and values used in computing the Shipping Expense and IDC Factor is the same as for the Sundry and Miscellaneous Factor in Project No. 14091. Other BNFs either cause no such expense, or it is applied in the investment study.

e. Staff Review and Recommendations

Staff has verified the mathematical calculations of the Sales Tax, Telco Engineering, Telco Plant Labor, and Shipping Expense and IDC Factors and Costs and found no errors in calculation.

Staff believes that the general methods used to develop the Sales Tax, Telco Engineering, Telco Plant Labor, and Shipping Expense and IDC Factors and Costs are logically consistent, as discussed in GC's Comment on 14091. Staff recommends that the Sales Tax, Telco Engineering, Telco Plant Labor, and Shipping Expense and IDC Factors be approved for the purpose of these LRIC studies, but reserves the right to reexamine the factors in later LRIC studies.

f. Total Installed Cost

The values for Total EF&I Investment, Telco Engineering, Telco Plant Labor, and Shipping Expense and IDC are summed, resulting in Total Installed Cost.

Note that because most of the BNF LRIC studies filed in this project do not show the application of the equipment investment factors on the ACF Sheet, the value reported on the Total Installed Cost line is the same number as that reported on the Total Equipment Investment (EF&I) line.

g. Staff Review and Recommendations

Staff has verified the mathematical calculation of the Total Installed Cost and found no errors and believes that the general methods used to develop the Total Installed Costs are logically consistent. Staff recommends that the methodology used to compute the Total Installed Costs be approved for the purpose of these LRIC studies, but reserves the right to reexamine the figure in later LRIC studies.

2. Determination of Total Investment

SWBT maintains that investment in central office equipment to provide certain types of BNFs cause a corresponding investment in power equipment and in central office buildings. The additional power investment and building modification investment are added to Total Installed Cost to arrive at Total Investment. It is developed behind Tab 5 of the '96 Incremental Methodology and Factors Binder.

a. Power Investment Factor

As discussed above, the Power Investment Factor develops the cost of electrical equipment needed to operate the equipment in the central office.

The only BNF LRIC studies filed in this project that apply the Power Investment Factor to unit investment on the ACF Sheet are those for the Personalized Ring per Line

and the DS Line Haul BNFs. For this study, the calculation methodology and values used in computing the Power Investment Factor is the same as it was in Project No. 14091 Other BNFs either cause no such expense, or it is applied in the investment study.

b. Staff Review and Recommendations

As stated in GC's Comments on 14091, Staff had been provided with the source of the inputs used to develop the Power Investment Factor only a short period of time before comments on Project No 14091 were due Therefore, Staff was unable to make an absolute determination as to whether or not the value of the factor was reasonable. Staff recommended that the factor be approved for the purpose of the LRIC studies filed in Project No. 14091, but reserved the right to reexamine the factor in later LRIC studies.

Upon further examination of the Power Investment Factor, Staff has determined that this factor represents an inappropriate allocation of costs (power costs for power equipment required for the circuit equipment) to outputs (BNFs), and is also based on embedded investment The methodology used to calculate this factor is very similar to that used to calculate the Building Modification Investment Factor. However, for ease of historical reference, Staff will discuss the inappropriateness of this methodology in its review and recommendation on SWBT's Building Modification Investment Factor. Staff believes that until a method is developed to show the direct power requirements and concomitant power costs caused by a BNF, power equipment investment should be regarded as a common cost, and therefore recommends that SWBT remove it from the

ACF Sheets (and cost models as appropriate) and report it as a common cost in the appropriate common cost studies. It should be noted that SWBT does not agree with Staff on this recommendation.

c. Total Equipment Investment

Total Equipment Investment is the sum of the Total Installed Cost and Power Investment.

d. Staff Review and Recommendations

Staff has verified the mathematical calculations of the Total Equipment Investment figure and found no errors. Staff believes that the general methods used to develop the Total Equipment Investment will be logically consistent when the Power Investment is removed. After the removal of the Power Investment, Staff recommends that the methodology used to compute the Total Equipment Investment be approved for the purpose of these LRIC studies, but reserves the right to reexamine the figure in later LRIC studies.